

# SUPPLEMENT.

# The Mining Journal,

## RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

No. 1232.—VOL. XXIX.]

LONDON, SATURDAY, APRIL 2, 1859.

[WITH STAMPED.... SIXPENCE.  
JOURNAL UNSTAMPED, FIVEPENCE.]

### HEAT-CONDUCTING POWER OF ALLOYS.\*

In the *Mining Journal* of last week we gave so much of the paper by Messrs. Crace-Calvert and Richard Johnson as related to the conducting power of pure metals, and now purpose giving a sketch of the remaining portion of the paper, to which, from its elaborate character, it is impossible to do full justice. With respect to the influence of small amounts of impurities on the conducting power of metals, they thought it would be useful to ascertain the influence which 1 per cent. of a metal exercises when added to another, and these are the curious results obtained with gold and silver.—The conducting power of pure gold was found to be 981, taking silver at 1000, whilst gold with 1 per cent. of silver was only 840. Therefore the addition of 1 per cent. of silver, the best conductor, to gold diminishes its conducting power nearly 20 per cent.

They also examined the influence of carbon on the conductivity of iron, and they found the difference to be about 18 per cent.; thus malleable iron is 436; steel, 397; and cast-iron, 359. The influence of a non-metallic substance on a metal is confirmed by the results obtained. Cast copper is represented by 811; with 1 per cent. of arsenic, 570; with 0.5 per cent. of arsenic, 609; and with 0.25 per cent. of arsenic, 771. The conduction of heat by alloys may be considered under three general heads.—1. Alloys which conduct heat in ratio with the relative equivalents of the metals composing them.—2. Alloys in which there is an excess of equivalents of the worse conducting metal over the number of equivalents of the better conductor, and which present the curious and unexpected rule that they conduct heat as if they did not contain a particle of the better conductor.—3. Alloys composed of the same metals as the last class, but in which the number of equivalents of the better conductor is greater than the number of equivalents of the worse conductor; in this case each alloy has its own arbitrary conducting power; the conductivity of such an alloy gradually increases, and tends towards that of the better conductor of the two metals composing the alloy.

The first class are those which conduct heat in the ratio of the conductivity of the metals composing them. This class is represented by the alloys of tin and lead and tin and zinc:—

TIN AND LEAD.				TIN AND ZINC.			
Formula of the alloys and percentage.		Silver=1000. Found. Calc.		Formula of the alloys and percentage.		Silver=1000. Found. Calc.	
5 Sn=73.97 + 1 Pb=26.03 .. 385 .. 386				5 Zn=73.43 + 1 Sn=26.57 .. 541 .. 572			
4 Sn=69.44 + 1 Pb=30.56 .. 381 .. 381				4 Zn=68.86 + 1 Sn=31.14 .. 574 .. 564			
3 Sn=65.01 + 1 Pb=35.00 .. 375 .. 372				3 Zn=64.43 + 1 Sn=35.57 .. 559 .. 551			
2 Sn=60.58 + 1 Pb=39.42 .. 359 .. 359				2 Zn=59.11 + 1 Sn=40.89 .. 522 .. 532			
1 Sn=56.15 + 1 Pb=43.85 .. 336 .. 336				1 Zn=53.66 + 1 Sn=46.34 .. 501 .. 495			
1 Sn=51.72 + 2 Pb=48.28 .. 313 .. 317				1 Zn=48.28 + 2 Sn=51.72 .. 475 .. 467			
1 Sn=47.29 + 3 Pb=52.71 .. 301 .. 300				1 Zn=43.85 + 3 Sn=56.15 .. 458 .. 451			
1 Sn=42.86 + 4 Pb=57.14 .. 289 .. 289				1 Zn=39.42 + 4 Sn=60.58 .. 447 .. 447			
1 Sn=38.43 + 5 Pb=61.57 .. 289 .. 291				1 Zn=35.00 + 5 Sn=65.01 .. 456 .. 443			

The above two series of alloys were the only ones which conducted heat as above stated, and from experiments they believe that the metals composing these alloys are simply mixed, and not combined together.

The study of the class of alloys containing an excess of the worse conducting metal being most interesting, they made many experiments to discover why the presence of one metal completely annihilates the conducting power of the other, especially when the latter is the better conductor of the two. The following statements afford an illustration:—

LEAD AND ANTIMONY.				ANTIMONY AND BISMUTH.			
Formula of the alloys and percentage.		Silver=1000. Found. Calc.		Formula of the alloys and percentage.		Silver=1000. Found. Calc.	
1 Pb=61.61 + 1 Sb=38.39 .. 190 .. 251				1 Sb=37.74 + 1 Bi=62.26 .. 62 .. 110			
1 Pb=47.60 + 2 Sb=52.40 .. 185 .. 237				1 Sb=23.26 + 2 Bi=76.74 .. 59 .. 91			
1 Pb=34.85 + 3 Sb=65.15 .. 184 .. 225				1 Sb=16.81 + 3 Bi=83.19 .. 59 .. 82			
1 Pb=23.63 + 4 Sb=76.37 .. 179 .. 219				1 Sb=13.17 + 4 Bi=86.83 .. 47 .. 77			
1 Pb=14.30 + 5 Sb=85.70 .. 179 .. 215				1 Sb=9.82 + 5 Bi=90.18 .. 48 .. 75			

It will be perceived that the alloys of lead and antimony conduct heat almost as if the square bars examined were composed of pure antimony, for if lead had influenced the passage of heat through the bars the conducting power of the alloys would have been much higher. The most important series of this class of alloys are those composed of tin and copper. The results obtained were:—

COPPER AND TIN.				COPPER AND TIN.			
Formula of the alloys and percentage.		Silver=1000. Found. Calc.		Formula of the alloys and percentage.		Silver=1000. Found. Calc.	
Cu=34.98 + Sn=65.02 .. 415 .. 558				Cu=9.73 + 5 Sn=90.27 .. 396 .. 459			
Cu=21.21 + 3 Sn=78.79 .. 431 .. 504				Sn=38.21 + 3 Cu=61.79 .. 494 .. 670			
Cu=15.21 + 3 Sn=84.79 .. 423 .. 481				Sn=31.73 + 4 Cu=68.27 .. 155 .. 686			
Cu=11.86 + 4 Sn=88.14 .. 429 .. 468				Sn=27.10 + 5 Cu=72.90 .. 207 .. 505			

The results obtained with one part tin and four parts copper were so extraordinary that the bar first prepared was re-melted and cast, from a fear that there might be in the mass some vacant space, or hole, impeding conduction; but as it yielded the same results when submitted to experiment, they decided to make a new bar, weighing most carefully the metals to be used, and also the bar when cast; the loss being only 0.5 per cent., they were satisfied that the bar was sound, and still it gave the same figures as the bar first experimented with, and, therefore, they concluded that an alloy of tin and copper, containing 68 per cent. of the latter metal, has a conducting power five times less than it should have according to theory. From the above results, it is highly probable that these alloys of tin and copper, and especially the three last, are definite chemical compounds; for if they were mixtures they would conduct heat in ratio to the equivalents of the metals composing them, and would not each have a peculiar and different conductivity. These views were substantiated by experiments which they have made with square bars, composed of sectional parts of copper and tin. These bars were made by Mr. Dancer, a very skilful optician, and the parts were soldered together with tin solder, in so thin a layer that it did not occupy a space of 0.25 millimetres in the five junctions. The first three bars they employed were of the usual dimensions, and composed of cubes of copper and tin, each 1 cub. cent., arranged in the following order:—Bar No. 1—2 cubes tin, 2 cubes copper, 2 cubes tin; bar No. 2—2 cubes copper, 2 cubes tin, 2 cubes copper; bar No. 3—cubes of tin and copper alternately. These bars conducted heat nearly as the theoretical results indicate, No. 1 giving 541 (silver=1000), whilst 568 was the theoretical calculation; No. 2 giving 575, 696 being the theoretical number, and No. 3 giving 570 instead of 634. The slight difference being probably due to the tin solder existing between each cube, and to the cubes not being perfect in all their dimensions. They were, however, not prepared for the curious results obtained with a bar composed of two longitudinal bars of tin, soldered to two of copper, and placed in juxtaposition; for although it contained in 100 parts the same weight of tin and copper as the last bar, it conducted heat at quite a different rate; in fact, its conductivity was the same as if the bar had been composed entirely of pure copper, and did not contain half its bulk of tin—this bar (No. 4) gave 829, whilst theoretically it should only have given 634. These interesting results were confirmed by having similar bars made of copper and zinc

and copper and lead; the former gave 842, whilst 731 was calculated; the latter 723, whilst 515 was calculated. They next had a bar (No. 7) made in which there was the same relative weight of tin and copper, but in which the surface of the two metal in contact was only one-half of that in the bar No. 4, and although the results leave some doubt whether the surfaces have an action, the figures are sufficiently different to deserve serious consideration. Although bars 4 and 7 theoretically gave the same results, it was found by experiment that whilst the former gave 829, the latter gave but 757. From their researches they conclude that tin, zinc, and lead exercise a marked action on the conductivity of the copper.

With respect to alloys in which there is an excess of the good conductor, the peculiar properties of the four bronze alloys, Sn 2 Cu, Sn 3 Cu, Sn 4 Cu, and Sn 5 Cu, having already been mentioned, they would have nothing more to add to them if it were not to illustrate the extraordinary influence which tin exercises on the conductivity of copper, and also to show that when there is a great excess of a good conductor in an alloy it overcomes the resistance of the bad conductor, and, in consequence, the conductivity of such alloys increases with the proportion of the good conductor.

TIN AND COPPER.				BISMUTH AND ANTIMONY.			
Formula of the alloys and percentage.		Silver=1000. Found. Calc.		Formula of the alloys and percentage.		Silver=1000. Found. Calc.	
Sn=27.10 + 5 Cu=72.90 .. 207 .. 705				Bi=62.26 + Sb=37.74 .. 62 .. 110			
Sn=15.63 + 10 Cu=84.37 .. 397 .. 749				Bi=45.21 + 2 Sb=54.79 .. 76 .. 132			
Sn=11.03 + 15 Cu=88.97 .. 402 .. 768				Bi=35.48 + 3 Sb=64.52 .. 80 .. 145			
Sn=8.51 + 20 Cu=91.49 .. 455 .. 778				Bi=29.20 + 4 Sb=70.80 .. 96 .. 153			
Sn=6.83 + 25 Cu=93.17 .. 475 .. 784				Bi=24.81 + 5 Sb=75.19 .. 108 .. 159			

The influence of excess of equivalents of lead is not so striking. The alloys of zinc and copper do not offer the distinctive degrees of conductivity that the alloys of copper and tin or bismuth and antimony present; but this may be due to the conducting powers of copper and zinc being within a few degrees of each other.

ANTIMONY AND LEAD.				COPPER AND ZINC.			
Formula of the alloys and percentage.		Silver=1000. Found. Calc.		Formula of the alloys and percentage.		Silver=1000. Found. Calc.	
Sb=38.39 + 2 Pb=61.61 .. 190 .. 251				Cu=49.32 + Zn=50.68 .. 688 .. 718			
Sb=23.68 + 4 Pb=76.32 .. 204 .. 265				Cu=32.74 + 2 Zn=67.26 .. 428 .. 687			
Sb=17.20 + 6 Pb=82.80 .. 221 .. 271				Cu=24.64 + 3 Zn=75.36 .. 531 .. 672			
Sb=13.48 + 8 Pb=86.52 .. 219 .. 274				Cu=19.57 + 4 Zn=80.43 .. 580 .. 663			
Sb=11.08 + 10 Pb=88.92 .. 230 .. 276				Cu=16.30 + 5 Zn=83.70 .. 595 .. 657			

It is probable that Cu 2 Zn, and Cu 3 Zn are definite compounds, for not only have they a special conducting power of their own far below that of the metals composing them, but also they are perfectly crystallised. The most splendid of all the brass alloys is the alloy Cu 3 Zn, which is of a beautiful gold colour, and crystallised in prisms often 3 centim. long. These crystals are also interesting on account of their extraordinary elasticity. It is surprising that so cheap an alloy has not been employed in commerce, for no commercial brass contains more than 30 to 35 per cent. of zinc, whilst the above contains 50.68 of this metal. The only explanation appears to be that if copper be alloyed with more than 50 per cent. of zinc, the alloys formed do not possess the colour of brass, but become white as zinc; and, therefore, manufacturers have never tried to unite these metals in the exact proportions given above. It is remarkable that a variation of a few per cent. in the relative proportions of the two metals no longer yields the beautiful alloy noticed, but only a white, and comparatively useless, one.

Alloys with an excess of copper gave the following results:—Zn 2 Cu, found 621 (silver=1000), calculated 748; Zn 3 Cu, found 638, calculated 764; Zn 4 Cu, found 665, calculated 770; Zn 5 Cu, found 715, calculated 780. They also thought it useful to analyse the following commercial alloys and determine their respective conducting powers, and the results obtained were—Yellow brass (Cu=64 + Zn=56), found 558 (silver=1000), calculated 712; pumps and pipes (Cu=80 + Sn=5 + Zn=7.5 + Pb=7.5), found 426, calculated 707; mud plugs (Cu=80 + Sn=10 + Zn=10), found 394, calculated 754; large bearings (Cu=82.05 + Sn=12.82 + Zn=5.13), found 345, calculated 751. It is extraordinary to find what a low conducting power these alloys possess; for, with the exception of "yellow brass," they do not conduct heat better than wrought and cast-iron; this is due to the impurity of the metals employed, and shows the advantage that there will be in substituting for them some of the much cheaper alloys above described. The second part of the paper on "Amalgams" will shortly be published.

\* For the information of our non-chemical readers—Sn means tin; Pb, lead; Sb, antimony; Bi, bismuth; Cu, copper; Zn, zinc. Sn 3 Cu means 1 part of tin combined with 3 parts of copper, and so on.

### COLLIERY OPERATIONS IN NEWCASTLE DISTRICT.—No. II.

PROGRESS DURING THE PAST FIFTY YEARS.

At the period of the invention of the safety-lamp there were large districts of pillars in the collieries of Durham and Northumberland where gas existed, and where the pillars had been left of only adequate strength to support the superincumbent strata, and to preserve the ventilation, so that candles could be used, and one-third, if not one-half, of the coal was thus left. With the safety-lamp these pillars became workable to profit. Where the extent of pillars was considerable, and they were previously only just sufficient to support the roof of the mine, a general crush or "creep" took place, which extended throughout the whole district of the pillars. The effect of such a process generally was that the pillars were crushed into the floor of the mine; while the fire-clay or soft shale forming the floor where the coal had been removed was forced upwards, and an almost solid mass of coal and shale was formed where the pillars and spaces formerly existed, which now became the support of the superincumbent strata. Vast districts of what were called "creep" pillars were thus formed, which the use of the safety-lamp has enabled us to work out. The late Mr. Buddle adopted a system of what was called panel working, which consisted in subdividing the coal field to be worked into square panels, or districts, around which a strong barrier of coal was left. He was thus enabled to form pillars in the first instance within the barriers, which was generally done with candles, and then to take away these pillars with the aid of the safety-lamp. Another system has been more extensively practised, which is to leave the pillars of coal in the first instance of such dimensions that they shall be sufficient to support the superincumbent strata during the operation of their removal afterwards, so that the coal is not crushed. The practical result of the improvements introduced within the past 50 years has been the recovery of large districts of pillars which were condemned, or which could not be worked by the means in operation at the commencement of that period; and the adoption of the different modes of working described has resulted in almost all the coal being obtained in the best possible condition. It may be said generally that no improvements in principle have been made in the mode of ventilating the coal mines of Northumberland and Durham within the last 50 years. The furnace has been the standard method adopted in these two counties from the earliest periods of coal

mining; and it is substantially the standard mode of ventilation employed almost universally at the present time. Attempts have been made at different periods to introduce other modes of producing currents of air in mines, but the furnace is still considered the most efficient ventilating power. Producing ventilation by pumping the air out of the mines was practised even in Smeaton's time; Mr. Branton proposed the centrifugal ventilating machine; more recently the steam-jet of Mr. Gurney was brought prominently before the coalowners of those counties, even by legislative recommendation; and still more recently the more perfect and, to a certain extent, more effective machines of Mr. Nasmyth and Mr. Struvé have been brought forward with practical performances of considerable magnitude. Still the furnace is the predominant power used in the Newcastle district.

At the commencement of the last 50 years, the only lights used in the coal mines were candles, or oil lamps and steel mills. The steel mill consisted of a cog-wheel and pinion, worked by a man or boy, and on the pinion axle a wheel steered at the circumference was fixed: a piece of flint was held in a proper position by the person working the mill, presenting the sharp edge of the flint to the steel wheel; the illumination produced by the sparks was the light obtained. An expert workman could keep up a continuous succession of sparks, and the light so produced was sufficient to enable a person to perform all the operations of working coal. The Davy, the Geordy (Stephenson's lamp), and the Clanny, are the three lamps now used in the collieries of Northumberland and Durham.

In the sinking of pits little improvement has been made within the last 50 years. In the district of the Tyne the bed of post, called the 70 fin. post, or a bed of sandstone, 120 ft. above the High Main coal, contains the most water, and has, consequently, presented the greatest obstacle to the sinking in that district. As it is, however, a hard rock, the difficulty consisted entirely in the engine power requisite to pump the water. It was in sinking through this stratum at one of the Killingworth pits that the late Mr. George Stephenson made his first advancement in life, through having an opportunity for showing his engineering ability. In the drawing of coals to the surface some changes have taken place. The almost universal mode of drawing the coals to the surface 50 years ago was by baskets, or corves, made of wicker-work from the hazel weedings of the oak woods in the South of England. This has almost as universally been superseded by the coals being put into tubs or square boxes, which are placed in a cage, the cage being made to slide up and down the pit by guide rods or timber guides. It had long been the custom to use tubs and cages in the midland counties, but it was not until 1833 that this mode of drawing coal was introduced into the Newcastle district.

The extended use of the steam-engine above ground, and also that of gravity or self-acting planes, has led gradually to their employment underground. Placing the boilers of the engines underground is attended with great risk of setting the coal on fire; it has, therefore, been a subject of enquiry how far the working power of the engines is affected by placing the machinery of the engines underground, and the boilers on the surface, and conveying the steam by pipes down the pit, and also, in some instances, conveying the waste steam up the pit again. All these different plans are employed, and it has been found that the steam can be conveyed down pits of 900 ft. deep without any perceptible difference between the pressure of the steam in the boilers on the surface and in a reservoir of steam near the cylinders underground—the diameter of the pipes being 10 or 11 in. for an 80-horse power engine.

### THE MINERAL WEALTH AND COMMERCE OF ECUADOR AND THE AMAZONIAN DISTRICT.

It appears that the Ecuador Land Company is likely to meet with opposition in its early infancy, although its greatest object was to confer an advantage upon the British creditors of Ecuador whilst benefiting the Ecuadorians themselves—an object which the most prejudiced must admit is worthy of cordial support. In accordance with the general rule adopted by the Journal, we should refrain from discussing political questions, yet in the present case the boundary dispute between Peru and Brazil on the one part, and Ecuador on the other, has arisen so entirely from commercial considerations that, far from overstepping the bounds of our usual policy, we think we are but fulfilling a duty in making what we believe to be the real facts of the case known.

The principal inducement for European capitalists to embark in any enterprise connected with Ecuador is the fact that the Ecuadorian Government has for some time past evinced the laudable desire to discharge its obligations; and it can, therefore, scarcely be argued that the promoters of the Ecuador Land Company would be so blind to their own interest as to mark the Ecuadorian boundary in such a position as willingly to prolong the dispute between Ecuador and Peru, and thus prevent the development of the resources of Ecuador to the prejudice of her British creditors.

In a very interesting paper upon the Explorations in Ecuador in 1856 to 1857, by Mr. Pritchett, communicated to the Royal Geographical Society by Mr. W. Bollaert, it is remarked, with reference to the route from Guayaquil to Quito, that on leaving the river at Bodegas the arrangements for land traffic are so miserable that goods are occasionally detained 12 months in that town for want of means of transport. Now, Quito being the capital of Ecuador, the Ecuadorians are naturally desirous that it should not be entirely shut out from the rest of the world; whilst on the other hand the Peruvians, their rivals, are equally anxious to cripple Ecuador by preventing her from bringing her immense mineral wealth into the market, and, not content with this, actually claim one-half of the entire state of Ecuador as its own. But the acquisition of additional territory is by no means the primary object of the pretensions of the Peruvians, the real point at issue between Ecuador and Peru being, as Mr. Hazlewood remarked at the Geographical Society, the possession of the head waters of the Amazon. The object to be attained by Peru is to close the Amazon against the trade of the world, at the instigation of Brazil, and to limit it to Brazilian and Peruvian ships; so that, in fact, a mighty river, capable of being navigated by merchant vessels from all nations, with advantage to all parties, would be monopolised by Brazil and Peru to the prejudice of all others. Under these circumstances it is surprising that encouragement should be given in England to the Ecuadorians to persevere in the establishment of their just claims? England is undoubtedly the first among commercial nations, and has, therefore, the greatest interest in the equitable settlement of the dispute between Peru and Ecuador; for if the latter state were compelled to give up its right to the Amazon, the extension of British commerce upon the Amazon and its tributaries would be almost impossible, whilst the free navigation of those rivers would enable a vast field for commercial enterprise to be opened up.

Avoiding, however, extremes on both sides, for it is not improbable that both Ecuador and Peru have somewhat exaggerated their claims, it may



be urged that the selection of the Amazon as the boundary between the two republics would satisfy all parties, as it would give both Peru and Ecuador the right of navigation, and would inflict, if any, no great injustice upon either state. For the sake of British commerce, the integrity of Ecuador must be maintained, and it appears that to take the Amazon as the boundary would answer all purposes. Assuming this to be the boundary decided upon, and no doubt the dispute will be ultimately settled, there can be no doubt that the mineral wealth of Ecuador will become available to British capitalists, and the whole of the denunciations of the Ecuador Land Company will become valuable. The Pailon, Atacames, and Molituro, on the west of the Cordillera, so well situate with respect to the Pacific, whilst Guayaquil and Canelas will be opened to the Atlantic from their admirable situation upon the tributaries of the Amazon. As to the development of the mineral wealth of the country, the single circumstance of German emigrants directing their attention to Ecuador is a sufficient guarantee that its mineral wealth will not be neglected, it being well known that wherever Germans or Cornishmen locate themselves the mineral riches of the district receive most careful consideration; hence a company constituted under auspices such as those of the Ecuador Land Company is worthy the attention not only of the creditors of Ecuador, but of capitalists generally.

#### OTTOMAN RAILWAY.

The half-yearly meeting of shareholders was held at the London Tavern, Bishopsgate, on Wednesday, Sir Macdonald Stephenson in the chair.

Mr. S. J. Cooke (the secretary) read the notice convening the meeting, and the reports, from which the subjoined is condensed:—

The directors have great pleasure in communicating to the shareholders upon this the second half-yearly meeting of the company, and in expressing their unabated confidence in the eventual success of the undertaking.

The contractor is prosecuting the work with vigour and dispatch. In St. Ann's Valley, where an extensive land slip occurred, he has employed men day and night to overcome that unexpected cause of delay, and has successfully accomplished his object.

The financial statement appended to this report will show the state of the company's affairs in reference to the shares, the capital account, and the expenditure up to Dec. 31, 1858. From this it will be seen that the total number of 60,000 shares, of which the capital of the company consists, there remain about 9250 unappropriated, including 5000 which the directors had been requested to reserve for Turkey, which are gradually being taken up.

The financial position of the company has been such that the directors, after meeting all demands upon them, whether in payment of the contractor's certificates, or for any other purposes, have been enabled to extend to those shareholders who have been in arrears with any of their calls a degree of liberality and forbearance which under any other circumstances would have been impossible, and the directors have done this the more readily from the conviction that the delay in paying calls has not arisen from want of confidence in the undertaking.

The total receipts, from the commencement to Dec. 31, 1858, amount to 204,594. 4s. 10d.; the total expenditure, 175,187. 8s. 2d.; the balance in hand to 29,407. 16s. 8d.; the arrears of calls, in England, 82,201. and in Turkey, 37,178. 45s. 39d. Since the date to which the accounts are made up—Dec. 31, 1858—arrears of calls to the extent of 19,604. have been paid.

The directors have to announce the temporary removal of the company from the official list of the Stock Exchange, in consequence of the regulations of the establishment not having been, in the opinion of the Committee, strictly complied with. The necessary arrangements will be made for the company being replaced upon the list as soon as possible. The following abstract of the reports of Mr. Edwin Clark and Mr. George Meredith, the company's engineers, will show that the works are in a satisfactory state of progress, and that no exertions have been spared to expedite their completion:—The most active operations have been confined to the first section of 40 miles, terminating at Ephesus, which is the centre of an important producing district, and a convenient point for receiving and delivering the through traffic between Smyrna and Aidin. Upon this portion of the line two-thirds of the earthworks are completed, and in a short time the road beyond St. Ann's Valley will be opened for the passage of locomotives into the plain through, where the line to a distance of 10 miles is formed ready to receive the permanent way. For the harbour works, composed of three basins and four piers, the proportion of earthwork for one basin is nearly completed, and timber of good quality sufficient for two piers delivered. The preliminary works of the tunnel are in progress, and the nature of the ground had been proved to be very favourable for the execution of this important work. The co-operation of the commissioners appointed by the Turkish Government, of an earnest desire to see its part to encourage and promote the success of the undertaking. Mr. Edwin Clark, the consulting engineer, reports states:—"There is no reason to doubt that if the proposed measures are carried out with vigour the line will be opened through to Ephesus in the ensuing autumn. The necessary shafts for working the tunnel have been sunk, and the heavy cuttings forming the approaches completed. The harbour works and stations will be made sufficiently complete before finishing the line, as they need not necessarily be finished. The engines are in a forward state, and some ready for delivery. The ultimate completion of the line much within the time originally estimated may be fully expected if increased exertions are now made. The opening of the section as far as Ephesus, so soon to be realised, will undoubtedly yield highly profitable returns, and prove that the estimates of the large traffic over the line have not been overstated."

The CHAIRMAN said that their recent advice, both from Constantinople and Smyrna, were highly satisfactory. Their finances were in as good a position as they could desire. The shares had been well taken, and the calls in arrears were gradually being reduced. With respect to their engineering works, the tunnel was progressing more favourably than they could have anticipated; instead of having a continuous drive through hard rock, they found the ground to be of an easy character after getting only 300 ft. in. This tunnel, and the work in St. Ann's Valley, constituted the key to the opening of the whole line. They were aware of the land-slip in St. Ann's Valley, but to render the subject more clear they had provided a plan of the place, and the nature of the accident could be more fully described if they wished it. From a letter, however, which he had received in the morning, dated Smyrna, March 19, he was enabled to communicate the gratifying news to them that the rails were laid through the St. Ann's Valley. At the previous meeting he gave them some statistics and other particulars bearing upon the progress of the undertaking, and since that time the directors had considered it desirable that he should visit the place: he had, therefore, been to Constantinople and to Smyrna, and he could confirm the reports which had been received in very particular by the result of his personal inspection. Fortunately whilst at Smyrna, Lord Stratford de Redcliffe happened to be there, and he consented to lay the foundation stone of their Smyrna station. There appears to be but one feeling existing towards the undertaking—that it was an enterprise which would do more for Turkey than any other. Whilst at Constantinople, Turkish ministers asked his advice as to the best course to be pursued with reference to the railway system, and he had unhesitatingly informed them that it was desirable to lay out the entire land upon a fixed system, and thus avoid the difficulties which had occurred in other countries. They coincided with his views, and to carry them out a committee would be formed, and meet in London, Paris, and Vienna to lay down a plan upon which to base their decisions. He would next refer to the removal of the company from the list of the Stock Exchange. The dispute arose from their considering themselves justified in reckoning the contractor's shares as part of the two-thirds of the shares required to be taken before the Stock Exchange would appoint a settling-day; the Committee of the Stock Exchange took a different view, but that the rule was ambiguous was admitted, and he had in his hand an amended rule, which provided that a certain proportion of the contractor's shares should be taken into consideration. He could only say that himself and his co-directors had acted altogether in error, and not with any intent to evade the Stock Exchange rules. In conclusion, they had proof of the good faith of the Turkish Government, and he, therefore, considered the company in as satisfactory a position as could be desired. He then moved the adoption of the report.

Major-General TRENKLE, in seconding the adoption of the report, said he did not know that he had said anything that had been already said by the chairman, but that if by the exertions of their contractor, and there had been hitherto no reason to complain of any laxity of exertion on his part, as well as by the punctuality of shareholders in paying up their calls, which is a very important element, they should succeed in opening a portion of the line by the end of the year, it would, so far as locality is concerned, be one of the most remarkable events in railway history. At each end of the first section, which will then, they hoped, be opened, there are two places of the greatest classical interest, and especially to a Christian people. Smyrna, one of the reputed birth-places of Homer, and the scene of the sufferings of Polyarp, while the present the Greek Church enjoyed more advantages there than in any other part of Turkey. At the other extremity was Ephesus, formerly one of the greatest emporiums of commerce, which they all knew was the scene of the labours of both St. Paul and St. John, and where the ruins are still, he believed, to be seen of the great Temple of Diana, one of the wonders of the world. If, therefore, in addition to the commercial value of the undertaking, places of such interest were brought under the influence of railway communication, there seemed to be an additional motive to prosecute their enterprise; and he could only assure them that to the best of his judgment there was every prospect of their endeavours being crowned with success.

The report was then unanimously carried.

Mr. LUMSDEN said that in his opinion the financial position of the company was unsatisfactory; he observed "fourth call in anticipation;" he had paid seven calls, and had not heard that they were in anticipation.

The CHAIRMAN explained that any shareholder was at liberty to pay calls in advance, and to receive interest upon money so paid. Mr. Lumsden must be in error as to the number of calls he had paid; and as to the Stock Exchange, the company would be replaced upon their list almost immediately.

Mr. Wm. HARRISON (a member of the Stock Exchange) said that the difference had been simply this—anything out of order and out of course detected by the Committee of the Stock Exchange was immediately examined into, and although pending such examination a slight injustice might be occasionally inflicted, he believed the course adopted by the Stock Exchange was justifiable. In this case he believed it had only been a slight and unintentional irregularity. No suspicion was entertained of the integrity of their directors, who had been subject, he considered, to some misrepresentation. They had nothing to complain of in their directors, and if there was no further business for the meeting he should certainly move a vote of thanks to the directors, and to the company being struck off the Stock Exchange list, he could only say that it had drawn his attention to the enterprise, and that he had since taken an interest in it; otherwise he would probably not have noticed it.

Mr. VALLANCE, in seconding the vote, remarked that so far as he could understand it the land-slip had been the greatest slip in the company, and he trusted they might have nothing worse. The vote was then unanimously carried, and the Chairman having acknowledged it the meeting separated.

**NEW ZEALAND.**—These remarkable colonies now absorb a large share of public attention. The well-known fertility of the soil, the mildness of the climate, and the pains taken by the Government to encourage the emigration of suitable parties by free grants of land and otherwise, all point to a future of greatness and prosperity. We notice that Messrs. H. T. Wilson and Chambers, of Liverpool, the owners of the celebrated "White Star" line of Australian ex-royal mail clippers, have decided to send a monthly line of packets for the leading ports of New Zealand. We hail this circumstance as a great boon to intending emigrants. The splendour and magnificence of their famous ships, their rapid and uniform passages, the punctuality with which they are sailed, together with the great experience this firm has had in the conveyance of emigrants, are material guarantees for the efficient manner in which this service will be carried out.

Liverpool is, par excellence, the port for emigration. The Liverpool ships have long ago carried away the palm from all competitors for speed and efficiency; and we have no doubt that this new enterprise will be thoroughly successful.

#### SALES OF COPPER ORES.

COPPER ORE SOLD AT CORNWALL TICKETINGS FOR THE QUARTER ENDING MARCH 31, 1859.

Mines.	No. of Sales.	Tons.	Amount.
Devon Great Consols.....	3	6048	£23,202 10 0
South Consols.....	3	1261	13,192 10 0
West Seton.....	3	1526	11,173 4 6
Wheat Basset.....	3	1626	10,823 8 0
United Mines.....	3	2167	10,008 8 0
Wheat Basset.....	3	1019	9,477 11 0
South Consols.....	3	1313	8,588 11 6
Wheat Clifford.....	3	1333	8,566 0 0
Phoenix.....	3	1299	8,221 17 0
West Consols.....	3	830	7,990 3 6
Par Consols.....	3	822	7,268 3 0
Alfred Consols.....	3	985	6,210 3 6
South Tolguis.....	3	802	6,050 11 0
Fowey Consols.....	3	807	5,536 19 0
Great South Tolguis.....	3	764	4,946 7 6
Wheat Buller.....	3	1123	4,877 8 0
Great Wheal Busy.....	3	1479	4,563 8 0
Tolvadden.....	3	753	4,560 0 0
Cradock Moor.....	3	441	3,999 7 0
St. Day United.....	2	795	3,955 18 0
North Roskear.....	2	577	3,831 8 0
Bedford United.....	3	627	3,828 10 6
Carn Brea.....	1	668	3,715 2 0
Great Wheal Alfred.....	3	709	3,703 15 0
Wheat Friendship.....	3	393	3,577 9 0
Wheat Seton.....	3	378	3,454 7 6
Wheat Margery.....	3	587	3,138 0 0
South Crinilis.....	3	471	3,135 10 0
North Basset.....	3	510	2,738 13 0
Collacombe.....	2	408	2,298 14 0
Rosewarne United.....	2	250	2,493 0 0
Graham and St. Aubyn.....	1	124	2,311 13 6
Wheat Ellen.....	2	425	2,161 2 6
Holmbush.....	1	170	2,119 18 6
Hungate Down.....	2	195	1,859 2 6
East Crinilis.....	2	405	1,931 15 0
West Fowey.....	2	191	1,919 12 0
Copper Hill.....	2	147	1,865 12 6
Wheat Charlotte.....	1	245	1,851 19 0
Gonamena.....	2	218	1,843 16 6
Levant.....	2	352	1,789 5 6
Kelly Bray.....	3	445	1,785 11 0
Calstock Consols.....	2	290	1,751 17 6
Condouff.....	1	290	1,688 0 0
Tucroff.....	1	352	1,646 3 0
Devon and Cornwall.....	2	351	1,477 13 0
North Wheal Robert.....	1	204	1,435 18 0
Trevoile.....	2	326	1,312 3 0
Lady Bertha.....	2	248	1,227 14 0
West Alfred.....	2	286	1,167 4 0
Wheat Anna.....	3	211	1,159 1 0
North Downs.....	2	123	931 14 0
Botallack.....	2	78	931 14 0
Hawkmoor.....	2	146	927 12 0
Carrack Dews.....	2	151	918 19 6
East Wheal Russell.....	2	131	913 4 0
North Crofty.....	2	172	908 16 6
West Damsel.....	1	188	874 10 0
Penden.....	1	177	871 18 6
West Stray Park.....	2	102	754 0 0
East Pool.....	2	159	747 12 0
Wheat Franco.....	2	192	743 12 6
Wheat Edward.....	1	225	722 7 6
Camborne Vein.....	1	128	693 13 0
Wheat Unity.....	5	111	680 12 0
East Tolguis.....	1	125	665 17 0
South Grenver.....	2	183	659 8 0
South Ellen.....	2	157	642 7 0
West Crinilis.....	1	115	616 7 6
Deloath.....	2	134	609 16 0
Wheat Henry.....	2	75	590 12 6
Marke Valley.....	1	165	565 13 0
Basset Consols.....	2	91	553 17 0
South Carn Brea.....	2	91	552 0 0
Tywarthall.....	1	102	522 5 0
Gunnis Lake.....	1	58	521 12 0
Wheat Mary Great Consols.....	1	60	516 10 0
Wheat Polmar.....	2	51	499 11 6
Wheat Agar.....	2	70	466 19 0
Sorridge.....	2	70	449 8 0
Carvannall.....	1	76	447 10 0
St. Aubyn and Grylls.....	2	45	413 19 0
Wheat Cny.....	1	80	412 12 0
East Carn Brea.....	1	61	400 14 6
Perran St. George.....	2	111	397 4 0
Devon and Courtenay.....	2	75	396 17 6
Killibuck.....	2	36	391 10 0
Duke of Cornwall.....	2	78	396 12 6
Wheat Harriett.....	2	78	376 16 0
East Alfred.....	1	45	356 12 6
Gawton.....	2	100	301 9 0
Devon Buller.....	2	48	309 12 0
South Crofty.....	1	70	286 13 0
Camborne Consols.....	1	51	286 12 0
Trebarvah.....	1	50	285 15 0
Crowdale.....	1	48	270 0 0
New Treleigh.....	1	63	266 7 6
Bottle Hill.....	1	69	262 13 6
Great Work.....	1	25	256 13 0
Old Tolguis United.....	2	78	250 11 6
North Busy.....	1	49	243 2 0
South Bedford.....	1	75	238 2 0
North Pool.....	1	37	208 2 6
Redmoor.....	1	60	207 0 0
Wheat South.....	1	64	207 0 0
Creeg Bravay.....	1	35	192 10 0
Tehidy.....	1	30	189 15 0
Wheat Crebor.....	1	50	181 5 0
Wheat Emily.....	1	50	155 0 0
South Dolcoath.....	1	11	147 8 0
Yarner.....	1	102	140 5 0
Peck Regulus.....	1	35	123 7 6
Boiling Well.....	1	22	123 4 6
Wheat Maxwell.....	1	12	123 2 6
Wheat Kitty.....	1	12	117 18 0
West Providence.....	1	20	117 0 0
Wheat Jane.....	1	38	114 0 0
Vivian and Co.'s Precipitate.....	1	5	110 2 6
Trethellan.....	1	34	104 5 0
Stray Park.....	1	29	100 1 0
East Rosewarne.....	1	16	98 16 0
Wheat Arthur.....	1	29	92 16 0
Tary Consols.....	1	28	88 0 0
Fisher's Ore.....	1	35	88 7 6
Cook's Kitchen.....	1	29	84 16 6
Clijah and Wentworth.....	1	13	80 5 0
Pedn-an-drea.....	1	16	79 12 0
Penberthy Crofts.....	1	16	78 0 0
West Carvannall.....	1	30	77 5 0
Wheat Russell.....	1	29	75 0 0
North Frances.....	1	16	71 8 0
West Condouff.....	1	6	64 18 6
Wheat Vyvyan.....	1	6	58 1 0
Enys Ore.....	2	13	46 18 6
West Wheal Jane.....	1	5	41 0 0
Wheat Carpenter.....	1	9	38 14 6
Vieick's Precipitate.....	1	3	37 11 6
North Godolphin.....	1	13	34 2 6
Wheat Grylls.....	1	8	30 12 0
East Lelauze.....	1	8	30 0 0
South Lady Bertha.....	1	7	26 15 0
Wheat Moyle.....	1	12	26 2 0
North Lelauze.....	1	6	22 4 0
Nangiles.....	1	7	21 3 6
Wheat Lelauze.....	1	9	21 3 0
Symonds's Precipitate.....	1	1	14 10 6
Brown's Ore.....	1	4	9 4 0
Wellington's Ore.....	1	2	9 0 0
Tranack.....	1	2	4 0 0
Total.....		45,000	£282,002 16 0

#### COMPANIES BY WHOM THE ORES WERE PURCHASED.

Companies.	Tons.	Amount.
Mines Royal Company.....	1746	£ 9,267 9
Vivian and Sons.....	5314	41,668 6 3
Freeman and Co.....	2166	18,971 15 5
P. Grenfell and Sons.....	5330	35,688 11 3
Crown Copper Company.....	1677	8,812 11 2
Rims, Williams, & Co.....	4590	29,392 5 11
Williams, Foster, & Co.....	7900	53,983 10 4
Mason and Elkington.....	5844	35,098 13 4
F. Barker.....	2721	15,241 0 2
Copper Miners' Company.....	2949	18,804 5 10
C. Lambert.....	1758	7,073 0 9
Newton, Keston, and Co.....	246	1,630 12 9
Alkali Company.....	268	863 17 7
Briton Ferry Company.....	1491	6,497 2 6
Total.....	45,000	£282,002 16 0

#### CORNISH MINING MAXIMS.—No. XII.

"ONE AND ALL."

This motto, the watch word and battle cry of the Cornish, is of great antiquity, as is proved by inscriptions of very remote dates. No doubt it originated in that peculiar characteristic of the Cornish people still existing in a great degree, notwithstanding the extended intercourse and familiarity with strangers consequent on modern improvements in society. Formerly the opportunity of visiting the metropolis was considered by a Cornishman as an event in his life; on his return he became quite a "lion" of the district, and an oracle of wisdom; even at this day, in the rural districts, at a cobbler's stall may be seen the important announcement—"from London." This complete isolation of the inhabitants rendered intermarriages of families the rule, hence the familiar term of cousin, uncle, and aunt, so continually heard in the county, where the people are caricatured by strangers as cousin Jackey, uncle Jan, and aunt Jenny; but the true feeling, idiom, and meaning of our motto will afford to forgive all these little whimsies and familiarities of "foreigners," as "up the country people" are sometimes called. So applicable, indeed, is the county motto to the habits and dispositions of the Cornish people that we doubt if a phrase more suitable could by possibility be discovered. Curious coincidences of mottoes suiting family characteristics, in a similar manner, are sometimes to be met with, as in the case of the Napiers, where "Ready, eye Ready" adorns their banner. The tantamount meaning of the Cornish maxim in the catalogue of English apothegms would be "Union is Strength." Probably the Master of Heraldy, who adopted it in his day, had this sentence in view when arranging the arms of the Duchy and county where the fifteen bezants are placed in a triangular form as indicative of union and strength. Be this as it may, the practical illustration of the maxim is necessary to the development of all the natural resources of the county, in which few opportunities are offered for success by individual enterprise, whilst in no part of the world is greater scope afforded for undertakings in which combination with a determined spirit of definite action are necessary.

This remark holds good in all her principal natural resources, whether mining, fishing, or her immense nautical marine be considered; combination and unity of action must be the essential to the execution, on a proper scale, of either of these. Nature seems to adapt the natives of every clime and every locality to the necessities of their fatherland. The Cornish are remarkable for their sanguine temperament, their indomitable perseverance, their ardent hope in adventure, and their desire for discovery and novelty; hence their wide distribution all over the world, in the most remote corners of which they are to be found amongst the pioneers; and to this very cause has science to boast of so many brilliant ornaments who claim Cornwall as their birthplace.

But we have more immediately to do with our subject as relating to mining, and here we beg again to remark that nothing could be so suitable to our purpose, as unity of action is the mainspring of success in all undertakings of this description; more mining companies have to date their ruin from want of attention to this precept than from all other causes put together, numerous and various as they are. This motto should be so much a household word that every account-house should have it painted over the door, and every board-room should have it displayed in large letters, to which a Chairman might point when he is surrounded by quarrelling and disputing shareholders.

Amongst the mining population the sentence is still a rallying word; "One and All" is the sound by which they may be at any time led, not driven. To the latter purpose we hope it will never have to be applied, but that in every day practice, whether in combination to work and carry out a great undertaking of mining, fishing, shipping, or other enterprise, for national or local benefit, the language of the Cornishman will still and for ever be "One and All."

GEORGE HENWOOD.

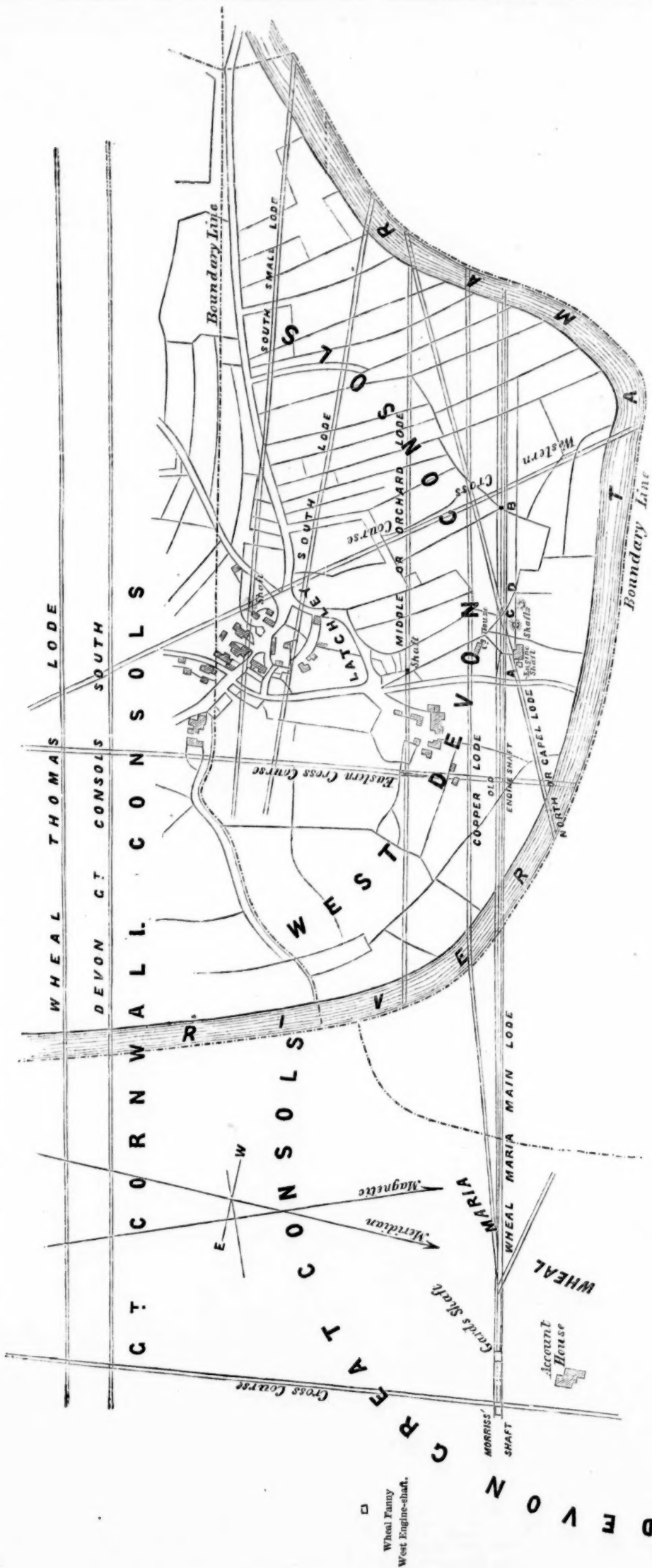
#### ST. DAY UNITED MINES.

The committee of management (through Mr. Edward King, the secretary) state that having, from various considerations, felt it imperative that they should visit the mines, and examine into every circumstance connected with them, they determined to do so, with the assistance of two experienced agents, who met them on the mines. The committee now have pleasure in publishing the following report of Capt. Francis Pryor, which has been approved and signed by Capt. John Delbridge and John Nancarrow, the agents referred to:—

**St. Day United Mines, March 18.**—Wheat Unity District: The 97, driving east of Garby's shaft, on Garby's lode, is producing 2½ tons of copper ore per fm., and its appearance indicates a further improvement shortly. The 80, west of Singer's, on Garby's lode, is at present unproductive, but its character within the last day or two is much more promising. Singer's shaft is sunk 7 fms. below the 80, and in two months from this time I expect it will be completed to the 90, where we have to drive about 10 feet south to cut the lode. Garby's lode in the 80, east of Singer's shaft, is producing occasionally large stones of tin, but not in sufficient quantities to value. We are now preparing to put in air-pipes, to enable us to drive a

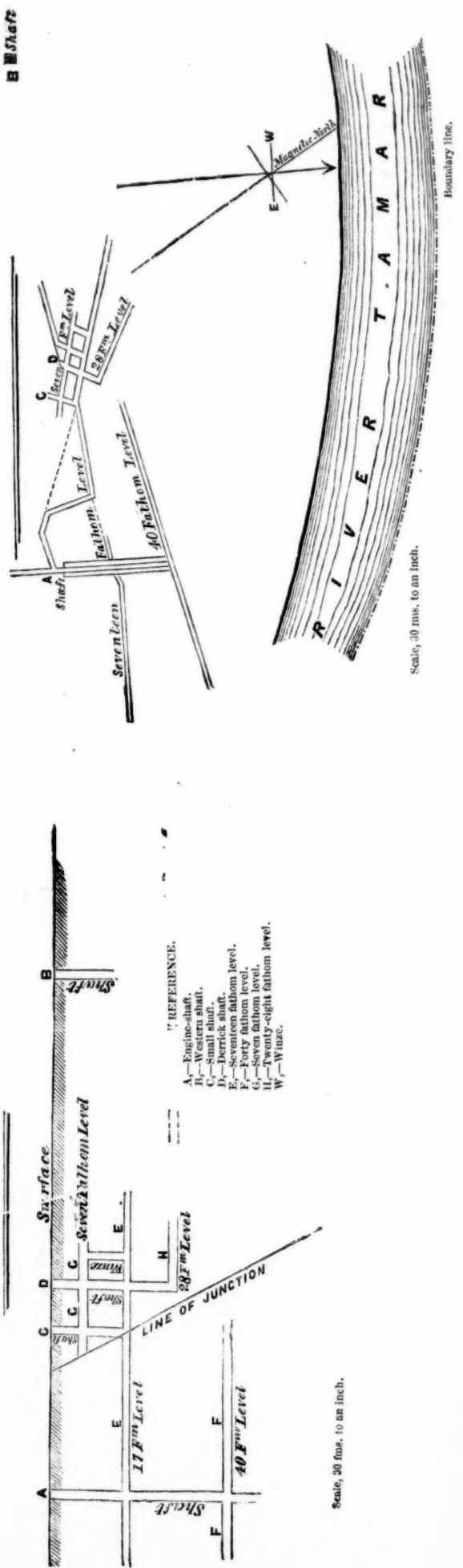


PLAN OF WEST DEVON CONSOLS, AND PART OF DEVON CONSOLS MINING SETTS.



HORIZONTAL PLAN OF WEST DEVON CONSOLS.

LONGITUDINAL SECTION OF WEST DEVON MAIN LODE



WEST DEVON CONSOLIDATED COPPER MINING COMPANY (LIMITED), CALSTOCK, COUNTY OF CORNWALL.

In 30,000 shares of £1 each.  
Deposit of 5s. per share to be paid to the bankers of the company on application.  
Four months to intervene between each call. No call to exceed 2s. 6d. per share.  
All liability to cease on payment of £1 per share.

DIRECTORS.

RICHARD BAGNALL, Esq., Cliff Hall, Tamworth.  
THOMAS COTTERELL, Esq., 50, Eaton-square, London.  
THOMAS ELD, Esq., Pool Hall, Market Drayton, Salop.  
EDWARD SHIRLEY KENNEDY, Esq., Boyne Grove, Maldenhead.  
JOSEPH WILSON, Esq., South Castle-street, Liverpool.  
THOMAS WINKWORTH, Esq., Canonbury, London.

BANKERS—The Commercial Bank of London.

SOLICITORS—Messrs. Croxley and Burn, 34, Lombard-street, City.

SECRETARY—Mr. William S. Trotter.

OFFICES—No. 1, GREAT WINCHESTER STREET, BROAD-STREET, E.C.

PROSPECTUS.

This mine is situated immediately adjoining on the western boundary of the Devon Consols, the directors of which mine, in their Fourteenth Report, dated May 25, 1858, declared dividends to the amount of £61,440, independent of the outlay of considerable sums in other works; and stated that the copper ore returned within the last

thirteen years amounted to £1,650,860 8s. 11d., and that dividends to the amount of £216,448 had been paid to the shareholders.

The workings of the West Devon Consols are within 50 fms. of the Devon Great Consols main shaft, and on the same lodes and strata, with every possible prospect of being equally productive.

Two hundred and fifty tons of copper ore have already been returned from that property through this set.

Capt. James Richards, the present mining captain and agent of the Devon Great Consols, has undertaken to superintend the workings of the West Devon Consols, after having duly inspected and reported on the same. The following is an extract of his report:—

"I am of opinion that the further prosecution of this mine should be carried out in the following manner:—That the present engine-shaft on the north lode be continued, and on reaching the respective depths of 40, 52, 64, and 76 fms., levels be extended both east and west, for the purpose of proving this lode, which so well deserves an effectual trial. That the sinking the old shaft 90 fms. to the west of the engine-shaft be resumed, and levels extended therefrom, the water from which can be drained by means of a line of rods attached to the present steam-engine. The middle lode shaft should also be sunk, and levels extended both east and west, at the same depths as advised above. The south lode should also be developed in a similar manner. 250 tons of copper ore, of rich quality, have been raised and sold. There is on the mine a 46 in. steam-engine, with a line of rods to the middle and south lode shafts, two capstans and shears, one rope, two horse-wheels and rope, together with an account-house, smiths and carpenters' shops, saw-pit, &c., and a quantity of spare materials; and the machinery and pitwork generally are in

good repair, and work well. In conclusion, I have to observe that—looking at these masterly lodes in the immediate neighbourhood, and embedded in the same mineralised kilias, as that of the Devon Great Consols, and the fact of there being two cross-courses running throughout the entire width of the set, in connection with which the best courses of ore are found—if my recommendations are carried into effect, the West Devon Consols will not only become a productive but a profitable mine."

"Devon Great Consols.—About the time of the commencement of the last working, I gave a detailed report of the extent and nature of the operations of this mine, and believing that the indications at surface and the character of the lodes underground were exceedingly promising, I expressed my opinion that if properly prosecuted it would prove productive. Since the date of that report the engine-shaft has been sunk some fathoms, and a few of the levels have been somewhat extended; but as the operations altogether have been on too limited a scale to justify the expectation of important results, I see no reason whatever to alter in the slightest degree the opinion I then gave, that on having a fair trial this will not fail to prove a profitable mine."

JAMES RICHARDS, Managing Agent at Devon Great Consols."

And which report is further borne out by Captain Jehu Hitchins, mining surveyor, a person of considerable eminence, and well-known in the mining world. The following is an extract from his report:—

"March 5, 1859.—On reading the reports of Capts. James Richards and Rowe, I fully agree with their general tenor, in supposing that this property (West Devon Consols) is a valuable one, provided a proper amount of capital, such as it requires, and which it has not yet had, is properly laid out therein. The work already done in sinking shafts and



rising levels is so much accomplished both in labour and time; and the machinery on the premises, together with a good plant of materials, which have cost a considerable sum, are so many auxiliaries towards a complete trial. Beyond the foregoing, I do not think it is a sufficient amount to give this adventure a fair and sufficient exploration. I consider that to develop the main lodes to a depth of 75 fms. with levels, &c., as also trials on the others to a fair extent, can be accomplished with a capital of £10,000, if well and economically applied, during the expenditure of which no doubt but returns of the copper ore will be made from the workings, so as considerably to aid the funds of the company at least, and more probably arrive at a profitable result; the outlay of which both the reports alluded to fully advocate, with which I also not only agree but cordially advise, as I believe that it is a good adventure.

Capt. Thos. Gill, who has been the mineral agent for the Duchy of Cornwall for the last seven years, but left to take a more lucrative situation in Cuba, and who is now the managing agent of Great Wheal Vor Mine, and is considered by the Duchy of Cornwall as an authority of considerable eminence, also examined this mine during the period he was employed as Duchy Surveyor. The following is extracted from his report to the directors of this company:—

"This property is bounded on the east by the eastern side of the Tamar River, adjacent to the Devon Great Consols Mine, and a continuation of the same lodes of that valuable mine must pass through it. Many attempts have been made to fully develop the lodes, but without success—partly from want of capital, and other causes. The deepest part of the mine is not more than about 32 fms. perpendicular from surface, therefore it is not general to suppose that large and regular deposits of ore can be expected at such a shallow depth (except in extraordinary cases) where there are such large lodes as those in this property; and I am of opinion that if these lodes are explored to a proper depth they will prove very productive, and yield great profit to those who may invest money in the speculation, if carried on in a spirited manner, together with judicious management."

THOS. GILL, late Mineral Agent to the Duchy of Cornwall.

The directors state that this company being registered under the Limited Liability Act, the shareholders are in no way responsible or liable, and can sustain no further loss than the money invested by them, being £1 per share, which may ultimately realise a considerable profit. The plan of this property will show the relative position of the two mines, Devon Great Consols and West Devon Consols; and, if any reliance can be placed upon the highly respectable agents, Messrs. Richards, Gill, Hitchens, and others, there can be no doubt that the West Devon Consols must be a good and lasting mine, and a profitable investment to the shareholders.

Applications for the remaining shares to be made to the secretary, 1, Great Wiltshire-street, Broad-street, E.C.

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